

REMARKS

1. STATUS OF THE CLAIMS

Claims 1-6, 17, 18, 23, and 24 are pending.

Claims 1-6, 17, 18, 23, and 24 are rejected.

Claims 7-16 and 19-22 were previously cancelled without prejudice.

2. REJECTION OF CLAIMS 1-4, 6, AND 18 UNDER 35 U.S.C. § 102(b)

The Examiner in the Final Office Action rejected claims 1-4, 6, and 18 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,254,259 issued to Kobayashi (hereinafter "Kobayashi"). Applicants respectfully traverse the § 102(b) rejection as to claims 1-4, 6, and 18 for the reasons set forth below.

The Manual of Patent Examining Procedure (MPEP) states that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. MPEP § 2131. Further, dependent claims include all the limitations of the claims with which they depend. MPEP § 608.01(n).

Independent claim 1 sets forth an automatic vehicle exterior light control system, including a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer, the controller is further configured to generate an exterior light control signal as a function of the presence of an atmospheric condition of interest, wherein the controller is further configured to distinguish between reflections off of a highly reflective surface and reflections off of atmospheric conditions of interest, wherein an exterior light control output of the controller is in a first state when reflections off of a highly reflective surface are detected and the exterior light control output is

in a second state when reflections off of atmospheric conditions of interest are detected. Applicants respectfully submit that each and every element of independent claim 1, including these limitations, is not taught by Kobayashi.

The Examiner in the Final Office Action interpreted Kobayashi to teach an automatic vehicle exterior light control system including a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light is a weighted average of a plurality of ambient light level readings acquired from a photo transducer (col. 3, lines 22-24), and further configured to generate an exterior light control signal as a function of the presence of an atmospheric condition of interest. The Examiner in the Final Office Action further interpreted Kobayashi to teach that the controller is configured to distinguish between reflections off of a highly reflective surface and reflections off of atmospheric conditions of interest, wherein an exterior light control output of the controller is in a first state when reflections off of a highly reflective surface are detected and the exterior light control output is in a second state when reflections off of atmospheric conditions of interest are detected (col. 4, lines 1-6).

Applicants respectfully submit that Kobayashi teaches a vehicle lamp system (1) that includes an environmental detection means (2), illumination control means (3), a lamp (4), and a driving means (5), wherein the environmental detection means (2) includes an image capturing means (2a), weather analysis means (2b), road surface analysis means (2c), and reference data acquisition means (2d) (col. 2, lines 53-61). Applicants respectfully submit that Kobayashi further teaches the weather analysis means (2b) detecting weather conditions immediately outside the vehicle by receiving image data from the image capturing means (2a) or the information from the reference data acquisition means (2d) (col. 3, lines 1-5). Additionally, Applicants respectfully submit that Kobayashi teaches the road surface analysis means (2c) determining conditions of the road surface by receiving the image data from the

image capturing means (2a) or from the reference data acquisition means (2d), wherein a contrast in brightness of a mark on a road is analyzed, the road surface analysis means (2c) determines the road surface conditions or geometry of a traveling path from a magnitude in the contrast (col. 3, lines 6-22).

By contrast, Applicants respectfully submit that independent claim 1 sets forth a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a weighted average of a plurality of ambient level readings acquired from a photo transducer. Thus, by controlling an automatic operation as a function of a weighted average of ambient light, the system can continue to perform during imager blockage and/or faulty imager detection. Applicants respectfully submit that Kobayashi does not teach such control as a function of a weighted average, and instead, Kobayashi teaches the environmental detection means (2c) determining a magnitude in a contrast of brightness (col. 3, lines 6-22). Applicants respectfully submit that this determination of a magnitude in a contrast of brightness does not teach a weighted average of a plurality of ambient light level readings acquired from a photo transducer, as set forth in independent claim 1. Moreover, Applicants respectfully submit that Kobayashi's deficiencies are further emphasized by Kobayashi not including anywhere in the application the phrase "weighted average." Therefore, Applicants respectfully submit that Kobayashi does not teach each and every element of independent claim 1, and respectfully request withdrawal of the § 102(b) rejection as to independent claim 1.

Furthermore, the Examiner in the Final Office Action rebutted Applicants' previously submitted arguments by citing to col. 3, lines 22-44 and col. 9, lines 4-10 of Kobayashi. Applicants respectfully submit that Kobayashi at col. 3, lines 22-44 teaches the reference data acquisition means (2d) acquiring and delivering reference data to the weather analysis means (2b), the road surface analysis means (2c), and the illumination control means (3), and the type of environmental data collected by the data acquisition means (2d). Applicants respectfully

submit that Kobayashi at col. 9, lines 4-10 teaches an illumination control system (17) and a controller (18), wherein the controller (18) receives, as input signals and input data, a signal output from an automatic headlamp switch (19), weather information from a road-to-vehicle communication/navigation device (20), a signal output from a wiper control switch (21), a detection sensor (22), information on a result obtained by an image captured by a CCD camera (23) and subsequently analyzed by an image analysis device (24), and a detection signal output from an outside air/humidity sensor (25). Applicants respectfully submit that clearly the reference data, as taught by Kobayashi, does not teach a weighted average, as set forth in independent claim 1. Thus, Applicants respectfully request withdrawal of the § 102(b) rejection as to independent claim 1 for these additional reasons.

Likewise, dependent claims 2-4, 6, and 18 are directly or ultimately dependent upon one of independent claims 1 and 17, respectively, and include all the limitations thereof. For at least the reasons set forth above, Applicants respectfully submit that Kobayashi does not teach each and every element of independent claims 1 and 17. More specifically, Applicants respectfully submit that Kobayashi fails to teach, *inter alia*, a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a weighted average of a plurality of ambient level readings acquired from a photo transducer, as set forth in independent claims 1 and 17. Therefore, Applicants respectfully submit that Kobayashi does not teach each and every element of dependent claims 2-4, 6, and 18, and respectfully request withdrawal of the § 102(b) rejection as to dependent claims 2-4, 6, and 18.

In further regards to dependent claim 18, this claim is dependent upon independent claim 17, and includes all the limitations thereof. Applicants agree with the Examiner's statement on page 7 of the Final Office Action as to the deficiencies of Kobayashi, wherein the Examiner admits that Kobayashi does not expressly disclose at least one probability function, and at least one neural network. Applicants respectfully note that the Examiner then relied

upon Simpson et al., *A Recurrent Neural Network Classifier for Improved Retrievals of Areal Extent of Snow Cover*, IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING, vol. 39, no. 10, October 2001 (hereinafter “Simpson”) to teach the aforementioned deficiency of Kobayashi. Therefore, Applicants respectfully submit that it is improper to reject dependent claim 18 under § 102(b), and solely citing to Kobayashi to support such a rejection. Thus, Applicants respectfully request withdrawal of the § 102(b) rejection as to dependent claim 18 for these additional reasons.

By way of the foregoing discussion, Applicants have demonstrated that claims 1-4, 6, and 18 are not anticipated by Kobayashi and the rejection of the claims under § 102(b) should therefore be withdrawn, which action is hereby respectfully requested. Additionally, Applicants further respectfully submit that claims 1-4, 6, and 18 would not have been rendered obvious by Kobayashi.

3. REJECTION OF CLAIMS 5 AND 17 UNDER 35 U.S.C. § 103(a)

The Examiner in the Final Office Action rejected claims 5 and 17 under 35 U.S.C. §103(a) as being unpatentable over Kobayashi in view of Simpson. Applicants respectfully traverse the § 103(a) rejection as to claims 5 and 17 for the reasons set forth below.

The MPEP states that an Examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. MPEP § 2142. The combination of prior art references must have been “obvious to a person with ordinary skill in the art.” *KSR Int’l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1742 (2007). To establish a case of *prima facie* obviousness, there must be some apparent reason why a person of ordinary skill in the art would combine the references, and the analysis should be made explicit. *Id.* at 1741; MPEP § 2142. Further, to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981 (CCPA 1974). If the prior art

does not teach or suggest all of the claim limitations, the Examiner must explain why the differences between the prior art and the claimed invention would have been obvious to one having ordinary skill in the art. MPEP § 2143.

Independent claim 17 sets forth an automatic vehicle exterior light control system, including a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer, the controller is further configured to identify the source of a reflection in an image by employing at least one of the parameters selected from the group including mean grayscale value of at least a portion of at least one image, total grayscale value of at least a portion of at least one image, average grayscale value of at least a portion of at least one image, slope of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, slope of pixel row location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, intercept of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, slope of pixel row location versus pixel grayscale value of at least a portion of a column of pixels within at least one image, a coefficient of determination, parabolic fit of at least a portion of column pixel value averages in at least one image, multiple images of differing exposure times, inputs from vehicle pitch sensors, a low-pass filter applied to at least a portion of an image, gradual vertical cutoff in at least a portion of pixel rows within at least one image, row average grayscale value net increase moving downward in at least one image, white-to-red ratio of at least one pixel in at least one white image and at least one pixel in at least one red spectral filtered image, sum of average grayscale values for at least one row in at least one image, increase brightness of controlled vehicle's exterior light and detect increase in reflection, at least one probability function, and at least one neural network, wherein a state of an exterior light control output of the controller is

at least partially dependent upon the source of the reflection in the image. Applicants respectfully submit that one having ordinary skill in the art would not have been taught or suggested to arrive at each and every element of independent claim 17, including these limitations, in view of Kobayashi and Simpson.

The Examiner in the Final Office Action interpreted Kobayashi to teach an automatic vehicle exterior light control system, wherein the reflections are identified by employing slope of pixel column location versus pixel grayscale value of at least a portion of a column of pixels within at least one image (col. 3, lines 50-52), and increases brightness of the controlled vehicle's exterior light (col. 3, lines 50-52). Further, the Examiner in the Final Office Action interpreted Simpson to teach a state of an exterior light control output of the controller is at least partially dependent upon the source of the reflection in the image.

Applicants respectfully submit that Kobayashi teaches a vehicle lamp system (1) that includes an environmental detection means (2), illumination control means (3), a lamp (4), and a driving means (5), wherein the environmental detection means (2) includes an image capturing means (2a), weather analysis means (2b), road surface analysis means (2c), and reference data acquisition means (2d) (col. 2, lines 53-61). Applicants respectfully submit that Kobayashi further teaches the weather analysis means (2b) detecting weather conditions immediately outside the vehicle by receiving image data from the image capturing means (2a) or the information from the reference data acquisition means (2d) (col. 3, lines 1-5). Additionally, Applicants respectfully submit that Kobayashi teaches the road surface analysis means (2c) determining conditions of the road surface by receiving the image data from the image capturing means (2a) or from the reference data acquisition means (2d), wherein a contrast in brightness of a mark on a road is analyzed, the road surface analysis means (2c) determines the road surface conditions or geometry of a traveling path from a magnitude in the contrast (col. 3, lines 6-22). Applicants respectfully submit that Simpson teaches an

accurate detection of aerial extent of snow in mountainous regions (Abstract). Applicants respectfully submit that Simpson further teaches a feed-forward neural network (FFNN) being used to classify individual images, and a recurrent neural network (NN) is used to classify sequences of images, wherein continuous outputs of the NN, combined with a linear mixing model, provides support for mixed-pixel classification (Abstract).

By contrast, Applicants respectfully submit that independent claim 17 sets forth a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a weighted average of a plurality of ambient level readings acquired from a photo transducer. Thus, by controlling an automatic operation as a function of a weighted average of ambient light, the system can continue to perform during imager blockage and/or faulty imager detection. Applicants respectfully submit that Kobayashi does not teach such a weighted average, and instead, Kobayashi teaches the environmental detection means (2c) determining a magnitude in a contrast of brightness (col. 3, lines 6-22). Applicants respectfully submit that this determination of a magnitude in a contrast of brightness does not teach a weighted average of a plurality of ambient light level readings acquired from a photo transducer, as set forth in independent claim 17. Moreover, Applicants respectfully submit that Kobayashi's deficiencies are further emphasized by Kobayashi not including anywhere in the application the phrase "weighted average." Therefore, Applicants respectfully submit that Kobayashi in view of Simpson does not teach or suggest to one having ordinary skill in the art to arrive at each and every element of independent claim 17, and that these references would not have otherwise rendered this claim obvious. Thus, Applicants respectfully request withdrawal of the § 103(a) as to independent claim 17.

Further, the Applicants agree with the Examiner's statement on page 7 of the Final Office Action as to the deficiencies of Kobayashi, such that Kobayashi does not expressly disclose at least one probability function, in at least one neural network. Applicants

respectfully submit that the FFNN of Simpson being used to classify individual images, and a recurrent NN being used to classify sequences of images, wherein continuous outputs of the recurrent NN, combined with the linear mixing model, provides support for mixed-pixel classification (Abstract) does not teach or suggest to one having ordinary skill in the art to arrive at a weighted average, as set forth in independent claim 17. Therefore, Applicants respectfully submit that Kobayashi in view of Simpson does not teach or suggest to one having ordinary skill in the art to arrive at each and every element of independent claim 17, and that these references would not have otherwise rendered this claim obvious. Thus, Applicants respectfully request withdrawal of the § 103(a) rejection as to independent claim 17.

Furthermore, the Examiner in the Final Office Action rebutted Applicants' previously submitted arguments by citing to col. 3, lines 22-44 and col. 9, lines 4-10 of Kobayashi. Applicants respectfully submit that Kobayashi at col. 3, lines 22-44 teaches the reference data acquisition means (2d) acquiring and delivering reference data to the weather analysis means (2b), the road surface analysis means (2c), and the illumination control means (3), and the type of environmental data collected by the data acquisition means (2d). Applicants respectfully submit that Kobayashi at col. 9, lines 4-10 teaches an illumination control system (17) and a controller (18), wherein the controller (18) receives, as input signals and input data, a signal output from an automatic headlamp switch (19), weather information from a road-to-vehicle communication/navigation device (20), a signal output from a wiper control switch (21), a detection sensor (22), information on a result obtained by an image captured by a CCD camera (23) and subsequently analyzed by an image analysis device (24), and a detection signal output from an outside air/humidity sensor (25). Applicants respectfully submit that clearly the reference data, as taught by Kobayashi, does not teach or suggest to one having ordinary skill in the art to arrive at a weighted average, as set forth in independent claim 17, and that Simpson fails to teach or suggest the aforementioned deficiencies of Kobayashi. Thus,

Applicants respectfully request withdrawal of the § 103(a) rejection as to independent claim 17 for these additional reasons.

Dependent claim 5 is dependent upon independent claim 1, and includes all the limitations thereof. For at least the reasons set forth above, Applicants respectfully submit that Kobayashi does not teach or suggest to one having ordinary skill in the art to arrive at each and every element of independent claim 1, and that Simpson fails to teach or suggest the aforementioned deficiencies of Kobayashi. More specifically, Applicants respectfully submit that Kobayashi in view of Simpson fails to teach or suggest to one having ordinary skill in the art to arrive at, *inter alia*, a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a weighted average of a plurality of ambient level readings acquired from a photo transducer, as set forth in independent claim 1. Therefore, Applicants respectfully submit that Kobayashi in view of Simpson does not teach or suggest to one having ordinary skill in the art to arrive at each and every element of dependent claim 5, and that these references would not have otherwise rendered this claim obvious. Thus, Applicants respectfully request withdrawal of the § 103(a) rejection as to dependent claim 5.

4. REJECTION OF CLAIMS 23 AND 24 UNDER 35 U.S.C. § 103(a)

The Examiner in the Final Office Action rejected claims 23 and 24 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,798,911 issued to Josié (hereinafter “Josié”) in view of U.S. Patent No. 5,963,148 issued to Sekine et al. (hereinafter “Sekine”). Applicants respectfully traverse the § 103(a) rejection as to claims 23 and 24 for the reasons set forth below.

Independent claim 23 sets forth an automatic vehicle exterior light control system including a controller configured to effect automatic operation as a function of an ambient light

value, wherein the ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer, the controller is further configured to detect at least one of a pedestrian and a bicyclist and further configured to provide a corresponding indication to an operator of a controlled vehicle, wherein a state of an exterior light control output of the controller is at least partially dependent upon detection of either a pedestrian or a bicyclist. Applicants respectfully submit that one having ordinary skill in the art would not have been taught or suggested to arrive at each and every element of independent claim 23, including these limitations, in view of Josié and Sekine.

The Examiner in the Final Office Action interpreted Josié to teach an automatic vehicle exterior light control system, including a controller configured to effect automatic operation as a function of ambient light value, wherein the ambient light is a weighted average of a plurality of ambient light level readings acquired from a photo transducer further configured to detect at least one of a pedestrian and a bicyclist and further configured to provide a corresponding indication to an operator of a controlled vehicle, wherein a state of an exterior light control output of the controller is at least partially dependent upon detection of either a pedestrian or a bicyclist. Further, the Examiner in the Final Office Action interpreted Sekine to teach a road situation perceiving system, in which an indication is provided to an operator of a controlled vehicle if there is an obstacle present in the road.

Applicants respectfully submit that Josié teaches headlamp systems in operation so that every instance of a journey, the minimum beam range does not drop below the instantaneous stopping distance of the vehicle on the particular light intensity required is determined and set. Additionally, Applicants respectfully submit that Josié teaches an automatic light system having a light sensor, wherein the light sensor is arranged externally on the vehicle and measures the average external light intensity independent of instantaneous dazzling, shade, and the like, and passes the corresponding signals to the control means (60) (col. 9, lines 5-10). Further,

Applicants respectfully submit that Sekine teaches an image of a road area ahead of a vehicle being formed based on road data read from a navigation system or based on an image shot by a camera means such as a video camera, wherein a temperature profile ahead of the vehicle detected by a temperature detecting means such as an infrared camera is superposed on the image of the radio area (Abstract).

By contrast, independent claim 23 sets forth a controller configured to affect automatic operation as a function of an ambient light value, wherein the ambient light value is a weighted average of a plurality of ambient light level readings acquired from a photo transducer. Thus, by controlling an automatic operation as a function of a weighted average of ambient light, the system can continue to perform during imager blockage and/or faulty imager detection.

Applicants respectfully submit that Josié in view of Sekine does not teach or suggest such a weighted average, and instead, Josié teaches a light sensor arranged externally on the vehicle and measuring the external light intensity independently of instantaneous dazzling, shade, and the like (col. 9, lines 5-10), and Sekine fails to teach or suggest the aforementioned deficiencies of Josié. Applicants respectfully submit that an average external light intensity, which must be independent of other light in the viewing area of Josié does not teach or suggest to one having ordinary skill in the art to arrive at a weighted average, as set forth in independent claim 23. Further, Applicants respectfully submit that the image and temperature profile of Sekine fails to teach or suggest a weighted average, as set forth in dependent claim 23. Therefore, Applicants respectfully submit that Josié in view of Sekine does not teach or suggest to one having ordinary skill in the art to arrive at each and every element of independent claim 23, and that these references would not have otherwise rendered this claim obvious. Thus, Applicants respectfully request withdrawal of the § 103(a) as to independent claim 23.

Dependent claim 24 is dependent upon independent claim 23, and includes all the limitations thereof. For at least the reasons set forth above, Applicants respectfully submit that Josié does not teach or suggest to one having ordinary skill in the art to arrive at each and every element of independent claim 23, and that Sekine fails to teach or suggest the aforementioned deficiencies of Josié. More specifically, Applicants respectfully submit that Josié in view of Sekine fails to teach or suggest to one having ordinary skill in the art to arrive at, *inter alia*, a controller configured to effect automatic operation as a function of an ambient light value, wherein the ambient light value is a weighted average of a plurality of ambient level readings acquired from a photo transducer, as set forth in independent claim 23. Therefore, Applicants respectfully submit that Josié in view of Sekine does not teach or suggest to one having ordinary skill in the art to arrive at each and every element of dependent claim 24, and that these references would not have otherwise rendered this claim obvious. Thus, Applicants respectfully request withdrawal of the § 103(a) rejection as to dependent claim 24.

Applicants : Joseph S. Stam et al.
Appln. No. : 10/777,468
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CONCLUSION

For all of the foregoing reasons, Applicants respectfully submit that claims 1-6, 17, 18, 23, and 24, are in condition for allowance, which action is hereby respectfully requested. If the Examiner has any questions or comments with respect to this Reply After Final, the Examiner is encouraged to contact the undersigned at 616.949.9610.

Please charge any additional fees and credit any overpayments associated with this Reply After Final to Deposit Account No. 16-2463.

Respectfully submitted,

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